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THE  
ONTARIO WATER RESOURCES  
COMMISSION  
  
WATER POLLUTION SURVEY  
  
OF THE  
  
CITY OF FORT WILLIAM  
  
DISTRICT OF THUNDER BAY

1964

CITY OF FORT WILLIAM - 1964  
DISTRICT OF THUNDER BAY

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R E P O R T

on

WATER POLLUTION SURVEY

of the

CITY OF FORT WILLIAM

District of Thunder Bay

September 22 and 23, 1964

Division of Sanitary Engineering

REPORT

ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

A water pollution survey was conducted in the City of Fort William on September 22, and 23, 1964.

Information pertinent to the survey was provided by Mr. J.A. Marshall, P.Eng., City Engineer. Mr. E.N. Johnson, Sewer and Construction Foreman, assisted in the sampling programme.

GENERAL

The City of Fort William, with a 1963 assessed population of 46,134 (1964 Municipal Directory) is located on the west shore of Thunder Bay, which is a water area of Lake Superior.

General drainage for the area is provided by the Kaministikwia River and Neebing River watercourses, which flow into Thunder Bay.

The Kaministikwia River splits into three sections prior to discharge into Thunder Bay. These watercourses are the Kaministikwia River, McKellar River, and Mission River. The three rivers form two islands known as Island 1 and Island 2. Island 1 which is located to the north contains approximately 630 acres and Island 2 contains approximately 830 acres. Residential development is not permitted on the islands, as this area is to be conserved for industrial purposes.

SEWERAGE WORKS

The City of Fort William is serviced by a combined type sewer system.

Approximately one-half of the sewage flow from the city drains into an interceptor sewer, which is located along the south side of the Neebing River. This interceptor sewer discharges to the newly constructed primary treatment water pollution control plant, located near the end of William Street. The effluent from this plant is discharged into the Kaministikwia River.

A sewage works programme is currently being instituted whereby the flow of untreated sewage now being discharged to the watercourses from other combined sewers will eventually be intercepted and channelled into the water pollution control plant.

Provision is also being made for the treatment and disposal of some of the industrial wastes from the city's manufacturing operations. However, no provision has been made in the plan to treat the wastes from the pulp and paper industries.

#### WATER POLLUTION

As a measure in assessing the degree of pollution being discharged from the city, water samples were collected, where possible, from the flow at or near the outfall from each of the municipal sewers. Representative samples were also collected from the receiving watercourses. These watercourses are the Kaministikwia, McKellar, Mission and Neebing rivers.

The sanitary chemical and bacteriological analyses of samples collected from the sewer flows and the receiving watercourses are listed in tables 1 and 2 respectively.

The locations of sampling points are designated on the accompanying

map by watercourse mileage distances from Thunder Bay.

#### INTERPRETATION OF LABORATORY ANALYSES

For convenience in the interpretation of laboratory analyses, the Water Resources Commission water quality objectives for surface-water drains and watercourses are listed:

##### Surface-Water Drains

5-Day BOD (Biochemical Oxygen Demand)

- not greater than 15 parts per million (ppm)

Suspended Solids Content

- not greater than 15 parts per million (ppm)

Coliform Count (M.P.N.-most probable number)

- not greater than 2,400 per 100 cubic centimeters (c.c.)

Anionic Detergent (as ABS)

The presence of anionic detergent indicates pollution from domestic sources.

##### Watercourses

5-Day BOD (Biochemical Oxygen Demand)

- not greater than 15 parts per million (ppm)

Coliform Count (M.P.N.-most probable number)

- not greater than 2,400 per 100 cubic centimeters (c.c.)

#### SIGNIFICANCE OF LABORATORY ANALYSES

The sanitary chemical and bacteriological analyses of all samples collected, from drains discharging into the Kaministikwia River, show results greatly in excess of the water quality objectives. The excessively high coliform counts, and the concentration of anionic detergent, indicate that domestic sewage and wastes are probably major sources of pollution.

These conditions emphasize the need for continuance of the sewerage

works programme which is currently being instituted.

SUMMARY

A water pollution survey was conducted in the City of Fort William on September 22 and 23, 1964.

The findings of the survey show that polluting materials are being discharged into the Kaministikwia River watercourse from the outfalls of municipal drains. Municipal drains investigated are tabulated in Table 1.

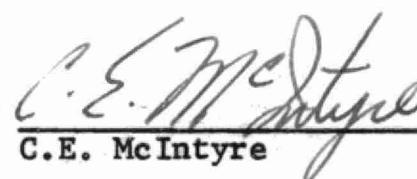
The extremely high BOD, coliform, and anionic detergent counts, indicate inadequately treated domestic sewage and other wastes to be major sources of pollution.

RECOMMENDATIONS

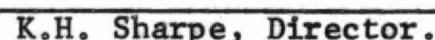
It is recommended, that, as a measure in the abatement and control of pollution, the City of Fort William should continue with its sewerage works programme as quickly as possible.

All of which is respectfully submitted,

District Engineer

  
C.E. McIntyre

Approved by

  
K.H. Sharpe, Director.

T A B L E I  
CITY OF FORT WILLIAM - WATER POLLUTION SURVEY  
SURFACE-WATER DRAINS

<u>Mileage Designation</u>	<u>Location of Sampling Point</u>	<u>5-Day BOD (ppm)</u>	<u>Solids (ppm)</u>			<u>Anionic Detergents as ABS (ppm)</u>	<u>Total Coliform Organisms per 100 c.c. M.P.N.</u>
			<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		
<u>Outfalls to Kaministikwia River</u>							
K 4.80 C	Stanley St.	92.0	460	92	368	7.6	11,000,000+
K 4.30 C	Between Bailey Ave. and Mountain Ave.	84.0	406	44	362	8.8	11,000,000+
K 4.20 C	James St.	26.0	710	22	688	0.2	11,000,000+
K 3.90 C	King St.	400.0	1918	408	1510	20.8	11,000,000+
K 3.10 C	Tarbutt St.		Broken in Transit				11,000,000+
K 2.33 C	Christina St.	56.0	418	48	370	6.0	11,000,000+
K 2.23 C	Empire Ave.		No sample collected				
K 2.10 C	New Vickers St.	86.0	398	60	338	9.4	11,000,000+
K 1.90 C	Duncan St.	25.0	214	12	202	1.5	11,000,000+
K 1.75 C	Ridgeway St.	125.0	338	56	282	3.6	11,000,000+
K 1.52 C	Donald St.	37.0	193	27	166	1.6	11,000,000+
K 1.40 C	Victoria Ave.	34.0	216	42	172	2.5	11,000,000+

T A B L E I C O N T ' D

<u>Mileage Designation</u>	<u>Location of Sampling Point</u>	<u>5-Day BOD (ppm)</u>	<u>Solids (ppm)</u>			<u>Anionic Detergents as ABS (ppm)</u>	<u>Total Coliform Organisms per 100 c.c. M.P.N.</u>
			<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		
K 1.10 C	Dease St.	340.0	1496	704	792	12.8	11,000,000+
K 0.90 C	McTavish St.	94.0	386	80	306	1.8	11,000,000+
K 0.70 C	McLeod St.	44.0	398	112	286	3.0	11,000,000+
K 0.57 C	McBain St.	41.0	488	114	374	1.2	4,600,000

## T A B L E 2

CITY OF FORT WILLIAM - WATER POLLUTION SURVEYWATERCOURSESKaministikwia River

Mileage Designation	Location of Sampling Points	5-Day BOD (ppm)	Total Solids (ppm)	Turbidity in Silica Units	Anionic Detergents as ABS (ppm)	Total Coliform Organisms per 100 c.c. M.P.N.
K 0.10	at Tenth Ave. N.	2.3	126	7.5	0.0	93,000
KMC 0.10	McKellar Branch at Tenth Ave.	2.0	112	13.0	0.1	9,300
KM 0.10	Mission Branch at Tenth Ave. S.	4.8	122	9.0	0.0	43,000
K 4.20	at Highway No. 61	3.7	136	6.0	0.0	23,000
K 5.50	near Fort William and Twp. of Neebing boundary	1.8	246	9.0	0.0	2,300

Neebing River

N 0.10	near mouth	2.1	214	8.5	0.1	930,000
N 1.20	at May Ave.	2.0	210	9.0	0.1	9,300
N 4.20	at Fort William and Twp. of Neebing boundary	0.7	216	6.5	0.0	15,000



LEGEND

.50 — SAMPLING POINT SHOWING STREAM AND MILEAGE

.57 — STREAM AND MILEAGE AT OUTFALL

C — TYPE OF OUTFALL

OUTFALL SYMBOL LETTERS

C — COMBINED SEWER

— INTERCEPTOR SEWERS

— INTERCEPTOR SEWERS (PROPOSED)

## ONTARIO WATER RESOURCES COMMISSION

# CITY OF FORT WILLIAM

## WATER POLLUTION SURVEY

SCALE: 1" = 800'	
DRAWN BY: A.R.S.	DATE: MARCH, 1965
CHECKED BY:	DRAWING NO: 65-47